



ADEM's Monitoring Strategy Background

- Monitoring Strategy
 - Required by EPA
 - 10 key elements
 - ~5-year strategies
 - **1996**
 - **2005**
 - **2012**
 - **2015**

10 Elements

- 1. Strategy
- 2. Objectives
- 3. Design
- 4. Indicators
- 5. Quality Assurance
- 6. Data Management
- 7. Data analysis/assessment
- 8. Reporting
- 9. Programmatic evaluation
- 10. Resource needs and planning

ADEM's Monitoring Strategy Review 2005-2014 Objectives and accomplishments

Estimate overall water quality

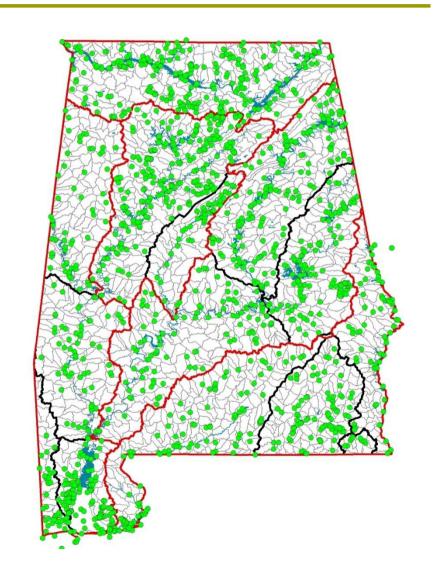
Estimate water quality trends

Assess water quality

Evaluate program effectiveness

Develop, adopt, or revise WQS

Develop criteria & indicators





2015 Monitoring Strategy Objectives and Priorities

Develop criteria & indicators

- Nutrient criteria for reservoir embayments and coastal areas
- Siltation indicators to assess impacts, develop TMDLS, and measure success
- Continue to develop biological indicators
- Establish reference reaches in protected areas

Assess water quality

• Monitor waters in all 5 assessment categories

Evaluate program effectiveness

• Estimate water quality trends after BMP and TMDL implementation

Collaborate with agency partners and stakeholder groups to meet common goals



Water Quality Process: Categories

Categories

1: fully meeting all use classifications

5: not meeting one or all use classifications (303d list)

2: Insufficient data

2a: available data indicate impairment

2b: available data do not indicate impairment

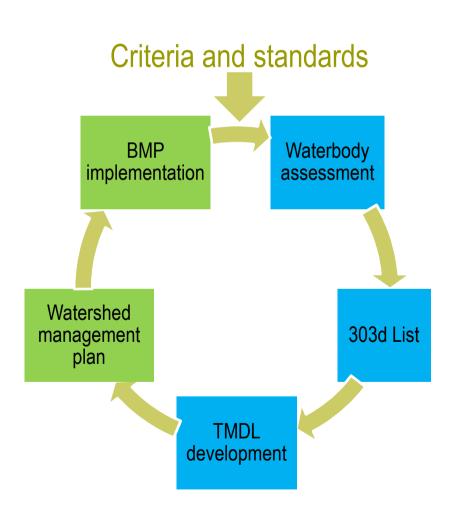
3: No data available

4: Waterbody impaired but remediation plan in place

4a: Approved TMDL

4b: Other action expected to result in attainment

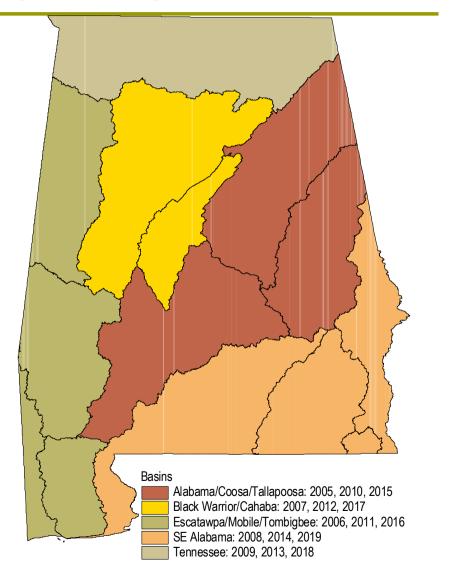
4c: impairment not caused by pollutant





2005-2014 Monitoring Strategy: Design

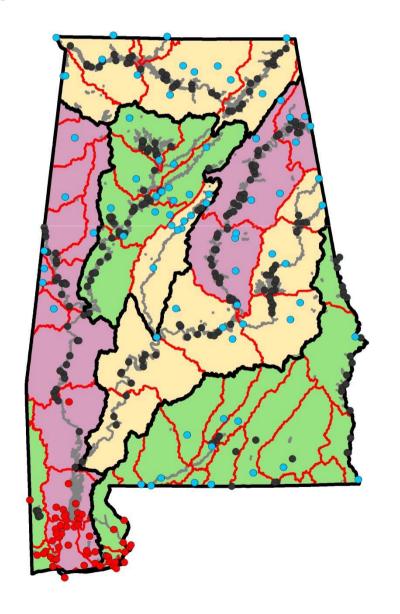
- 5-Year Basin Rotation
 - Fixed Stations
 - Rivers and reservoirs
 - Targeted Stations
 - Sampled annually
 - Fixed stations
 - Long-term trend stations
 - Coastal Program





2015 Monitoring Design Basin Rotation: Fixed Stations

- 1. Basin Rotation
 - Fixed stations
 - □ 3-year Monitoring Cycle
 - Rivers and Reservoirs Program
 - Monitored Annually
 - Long-term trend stations
 - Coastal Program

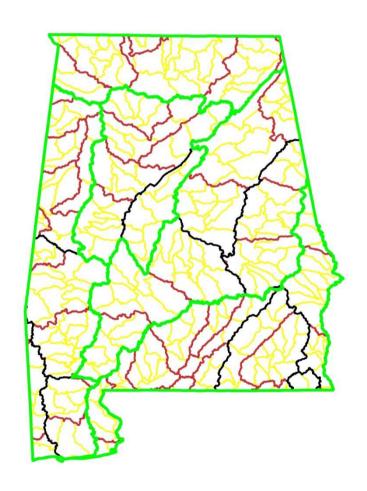




2015 Monitoring Design Targeted Stations: Even Annual Statewide Monitoring

\Box **EAS**

- More frequent, intensive monitoring
- NPS and TMDL "success" stories
- More frequent data
- Respond to data needs more quickly
- Dataset less impacted by severe weather
- Even resource needs year-to-year

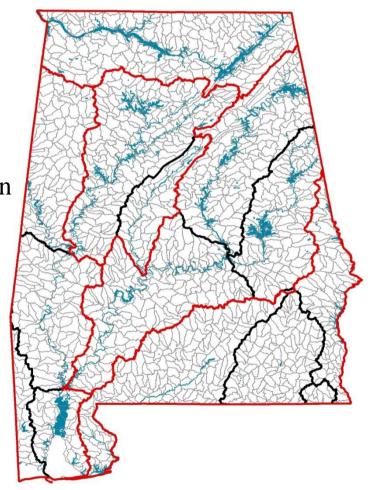




2015 Monitoring Design12 digit HUCs

Monitor entire 12-digit HUC

- 319 program measure of success
- Used by many programs
- Readily available, statewide information
- Help prioritize waters for monitoring
- Already delineated





2015 Monitoring Design Prioritization Framework

Develop criteria & indicators

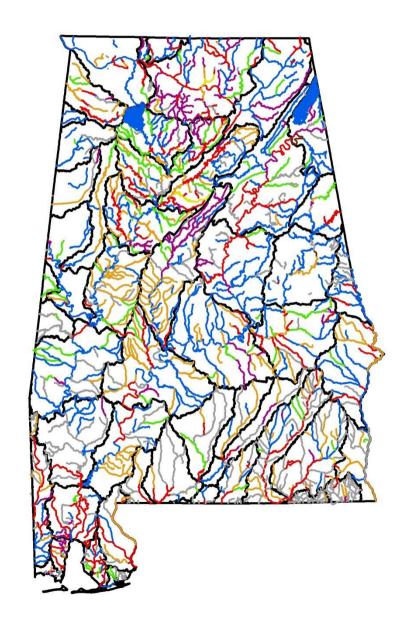
- Nutrient criteria
- Siltation indicators
- Biological indicators
- Reference reaches in protected areas

Assess water quality

• Monitor waters in all 5 assessment categories

Evaluate program effectiveness

- Estimate trends after BMP <u>and TMDL</u> implementation
- Collaborate with agency partners and stakeholder groups to meet common goals





Develop criteria & indicators

- Siltation indicators
- Biological indicators
- Reference reaches in protected areas

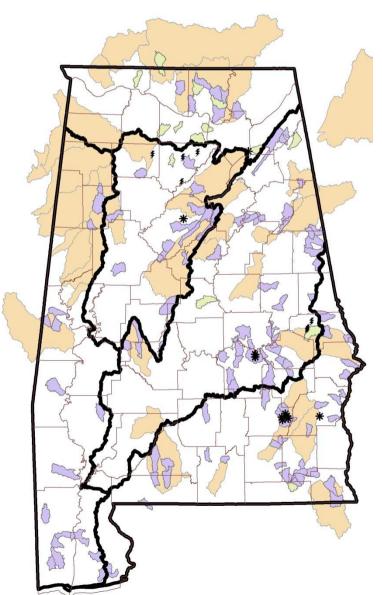
Assess water quality

• Monitor waters in all 5 assessment categories

Evaluate program effectiveness

• BMP <u>and TMDL</u> implementation

- SWCD and CWP priority HUCs
- Alabama Water Watch priority waters
- ADCNR, USFWS, GSA, Others





Develop criteria & indicators

- Siltation indicators
- Biological indicators
- Reference reaches in protected areas

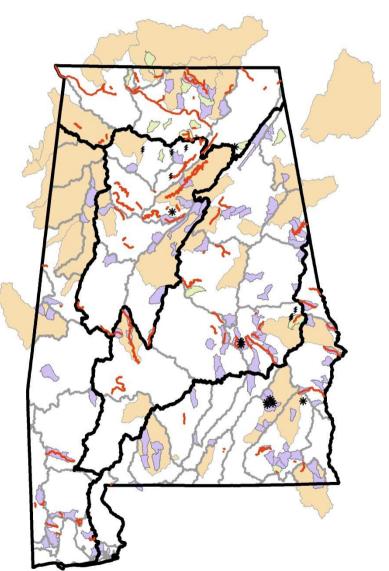
Assess water quality

- Monitor waters in all 5 assessment categories
 - Category 5 waters

Evaluate program effectiveness

• BMP and TMDL implementation

- SWCD and CWP priority HUCs
- Alabama Water Watch priority waters
- ADCNR, USFWS, GSA, Others





Develop criteria & indicators

- Siltation indicators
- Biological indicators
- Reference reaches in protected areas

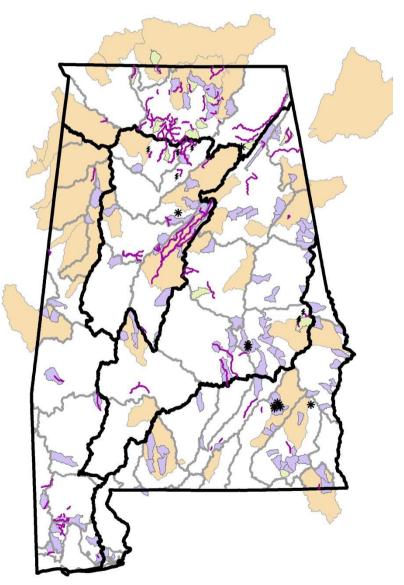
Assess water quality

- Monitor waters in all 5 assessment categories
 - Cat 4a waters

Evaluate program effectiveness

• BMP and TMDL implementation

- SWCD and CWP priority HUCs
- Alabama Water Watch priority waters
- ADCNR, USFWS, GSA, Others





Develop criteria & indicators

- Siltation indicators
- Biological indicators
- Reference reaches in protected areas

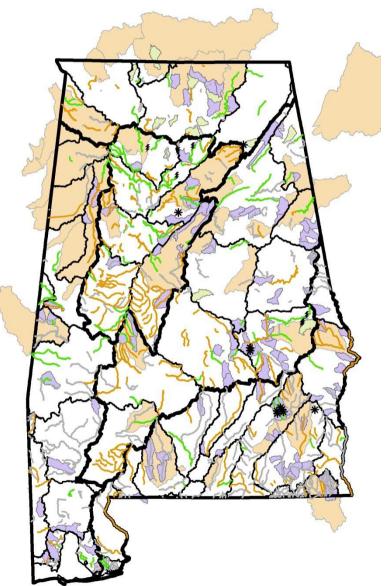
Assess water quality

- Monitor waters in all 5 assessment categories
 - Categories 2a, 2b, 3, and unassessed

Evaluate program effectiveness

• BMP <u>and TMDL</u> implementation

- SWCD and CWP priority HUCs
- Alabama Water Watch priority waters
- ADCNR, USFWS, GSA, Others





Develop criteria & indicators

- Siltation indicators
- Biological indicators
- Reference reaches in protected areas

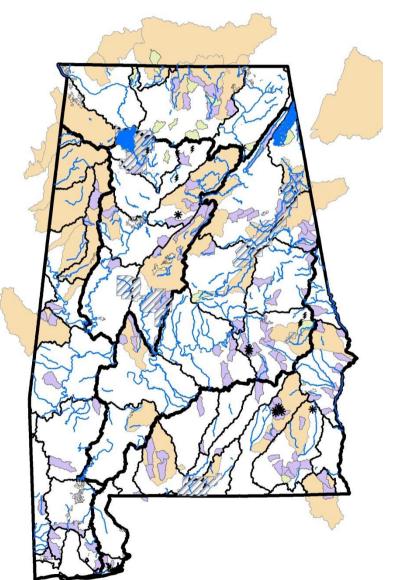
Assess water quality

- Monitor waters in all 5 assessment categories
 - Cat 1 waters

Evaluate program effectiveness

• BMP and TMDL implementation

- SWCD and CWP priority HUCs
- Alabama Water Watch priority waters
- ADCNR, USFWS, GSA, Others





Annual Surface Water Quality Monitoring Plan (SWQMP)

- □ Locations to be monitored, sampling frequency and parameters
 - Compilation and coordination of monitoring
 - Process conducted annually 2004-2013
 - One plan developed annually for one basin group
 - □ Small group of participants
 - 2015 process
 - □ EAS: Five smaller sampling plans completed each year
 - Completed by basin teams



2015 Surface Water Quality Plan: ALEM Developed by Basin Teams

Water Division-Water Quality Branch

Criteria and Standards

Assessment and Listing

Total Maximum Daily Loads (TMDLs)

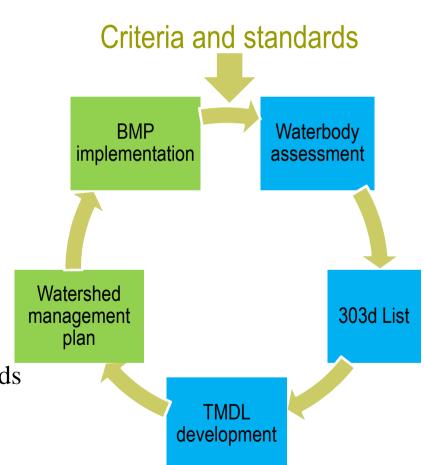
Nonpoint Source Unit-Restoration

Field Operations Division-Monitoring

Basin Coordinators:

Different types of crew leaders NPS Program TMDL, WLA, LA, Special Studies

Assessment and Water Quality Standards



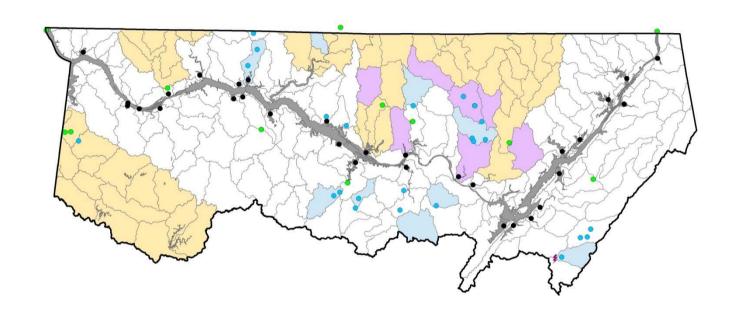


Surface Water Quality Monitoring Plan: 2015 Process and Timeline

- September-October:
 - Monitoring requests
 - Monitoring Strategy Workshop
- October:
 - Basin Team Meetings
- November-December:
 - Station recons
- January:
 - Follow-up Webinar/Meeting
 - Finalize individual basin plans
 - Combine individual basin plans into statewide SWQMP
 - Review and revised by program leads
 - Plan finalized
- February: 2015 SWQMP Meeting

2015 Surface Water Quality Plan: ADEM Tennessee







RRMP Sampling

- Alabama R Basin
- Tallapoosa R Basin

Tallapoosa R

- Tributary Embayment Nutrient Study
- Intensive Survey

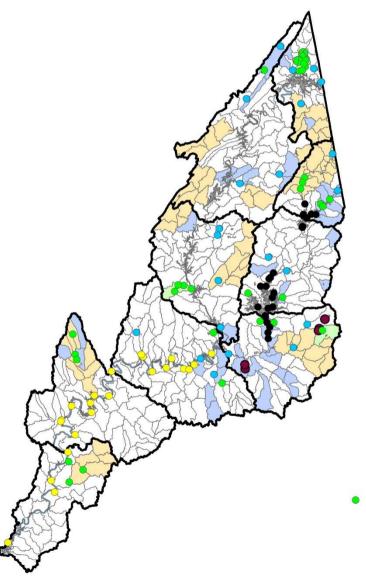
Use Support Assessments (Cat 2 and 3 waters)

TMDL Development (Cat 5)

- Callaway Ck (Alabama)
- Little Wills Ck (Coosa)
- Tallapoosa R (Tallapoosa)
- Wolf Ck (Tallapoosa)

Category 4a: Post BMP

- Mud Ck (Coosa)
- Spring Ck (Coosa)







20 Trend stations

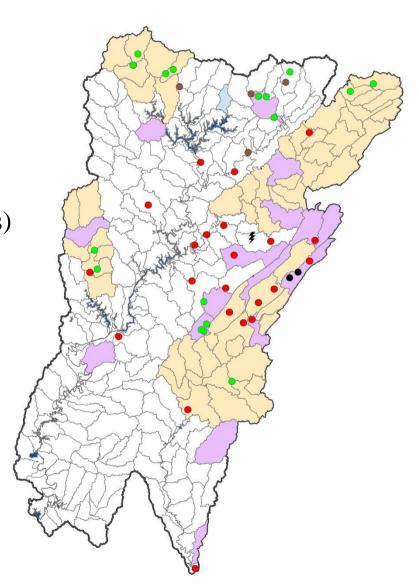
RRMP Sampling

• Cahaba R Basin (Lake Purdy)

Use Support Assessments (Cat 2 and 3 waters)

Category 4a: Post TMDL

- Broglen R (Black Warrior)
- Duck Ck (Black Warrior)
- Eightmile Ck (Black Warrior)
- Cooley Ck (Cahaba)
- Mill Ck (Cahaba)
- Mud Ck (Cahaba)



2015 Surface Water Quality Plan: ALEM Escatawpa, Mobile, Peridido, Tombigbee

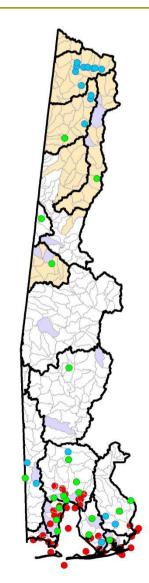
Trend stations

Coastal Monitoring Program

Use Support Assessments (Cat 2 and 3 waters)

Category 4a: Post BMP

- Juniper Ck (Escatawpa R)
- Unnamed tributary to Bon Secour R (Mobile Bay)





2015 Surface Water Quality Plan: ALEM SE Alabama River Basins

<u>2015</u>:

17 Targeted Stations

• SWCD National Water Quality Initiative

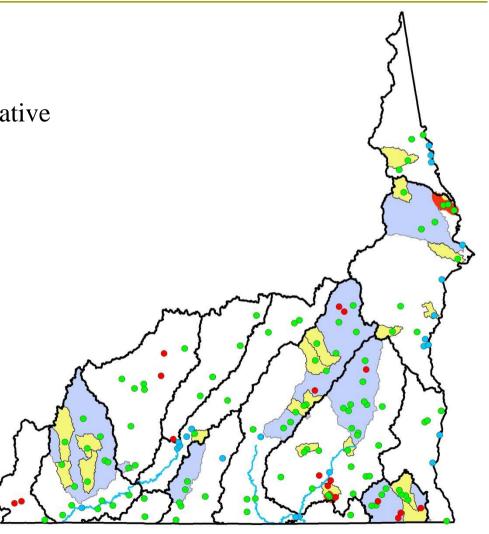
• Category 2 and 3 waters

15 Trend Stations

<u>2014</u>:

157 Total Stations

- 40 RRMP
- 117 RSMP



ADEM Monitoring Strategy and SWOME. Take Home Messages

- Monitoring conducted statewide annually
- Data requests can be made to your basin team coordinators

 Your priorities and data are used to help direct our monitoring efforts



2015 Surface Water Quality Plan

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